

CLAIMS

1. A method for determining the torque on transmission shafts, characterized in that in the case of a constant transmission ratio, the rotational speed of a first gear shaft (2, 19) and that of a second gear shaft (3, 22) are measured cyclically, a first torque being present at the first gear shaft (2, 19) and a second torque being present at the second gear shaft (3, 22), and the second gear shaft (3, 22) being driven directly or indirectly by the first gear shaft (2, 19) via gears (5, 6, 7, 8; 20, 21), that a quotient can be computed from the two rotational speeds and subsequently stored, that the current quotient is compared to the quotient from a previous measurement, and that from the difference between the quotient of the current measurement and that of the previous measurement a change in the torque of the first gear shaft (2, 19) is concluded.

2. The method according to claim 1, characterized in that from the difference of the quotients the torque on the first gear shaft (2, 19) is determined.

3. The method according to claim 1 or 2, characterized in that the rotational speeds of the two gear shafts (2, 3; 19, 22) are determined with the help of rotational speed sensors (12, 13; 25, 29), which generate electric impulses based on the rotational speed.

4. The method according to claim 3, characterized in that from the measured electric impulses of the rotational speed sensors (12, 13; 25, 29) at the two gear shafts a phase or angle shift (α) of the impulses is determined, which is proportional to the transmitted torque and to the elasticity of the transmission components transmitting the torque, and is also analyzed as an characteristic value of the input torque.

5. The method according to at least one of the above claims, characterized in that the rotational speeds of the driving motor or the gear input shaft (2) and the rotational speeds of one of the gear output shafts (3) are measured.

6. The method according to claim 5, characterized in that the torque of a combustion engine is determined.

7. The method according to at least one of the above claims 1 to 4, characterized in that the braking torque of a retarder (18) is determined.

8. The method according to claim 7, characterized in that the rotational speeds of the two gear shafts (19, 22) associated with a retarder (18) are measured.

9. The method according to at least one of the above claims, characterized in that the traction and shearing torque in the transmission is determined.

10. The method according to at least one of the above claims, characterized in that it can be used for determining torque in the case of an automatic or automated manual transmission with or without splitter drives.

11. A device for determining a torque on the gear shafts, comprising an evaluation and control device (14), which captures and analyses torque-relevant measurement signals from sensors at the transmission through sensor lines (15, 16), characterized in that the evaluation and control device (14) is provided with two rotational speed sensors (12, 13; 25, 29), which are arranged on two gear shafts (2, 3; 19, 22) a first torque being present on the first gear shaft (2, 19) and a second torque being present on the second gear shaft (3, 22), that the evaluation and control device (14) comprises a computation area, in which a rotational speed quotient of the captured rotational speeds in a measuring cycle is computed, that the evaluation and control device (14) also comprises a data storage device for storing the rotational speeds and/or the quotient of the rotational speeds, that the evaluation and control device (14) comprises a comparison area, where the quotient of the last measuring cycle is compared to the quotient of the previous measuring cycle, that the evaluation and control device (14) comprises a decision area, where the change in the gear input torque can be determined on the basis of the comparison of the quotients, and that the evaluation and control device (14) can triggers orders for executing transmission ratio changes based on this information.

12. The device according to claim 11, characterized in that the evaluation and control device (14) comprises a determination area, where the first torque present on the first gear shafts (2; 19) can be determined from the determined change in torque.